

## Shay Transporter & Test Fixtures

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Recall that I stopped work on the drive shafts and universals when the lathe drive belt broke. I made the engine mount while waiting for the replacement belt to arrive. Finished the mount and still no belt so decided to finish the planned transporter and test stand.

Recall that the completed locomotive will weigh over 400 pounds so at some point I'll have to deal with moving it. Some months back Harbor Freight had a 1100 pound capacity hydraulic table on sale for \$200. The table has large wheels and the height adjusts from 11" to 33" This seemed to be a nice way to move the locomotive ---- the table lowered to get a low center of gravity for stability when moving and then be raised for construction and maintenance. The plan was to put about 7 feet of rail on the top. The problem was that the table top is 3 feet long necessitating that the rails extend beyond the edge of the table --- interfering with the handle and hydraulic controls.



The photo above shows the modified table, now called a *Shay Transporter*. I had rolled it out of the basement workshop onto a cedar walkway. (This photo was taken in May. The wife had fertilized the lawn a few weeks before --- against my wishes. With the spring rain, the grass grows about 6" per day. Guess who cuts the grass?) The rails are 1/8" X 1.5" channels clamped to the top of the table. There are stops at each end to keep the locomotive from rolling off the end. The stops can be removed so that the locomotive can be rolled off on to a track.

This photo shows the modifications to the hydraulic table. The black angles at the bottom move the handle and controls about 32" to the rear. I had those angles on hand and are certainly overkill for this application. The orange knob controls the hydraulic release valve. It was necessary to make a ~32" extension to the part of the shaft between the black angles. The rusty bar is an extension to the foot operated hydraulic pump. The foot pedal extension reduces the amount of lift from each pedal operation but is still very usable.



One of the problems I faced was being able to test the engine and drive train operation without a track. The solution was the *Test Fixture* shown on the right. The fixture consists of a pair of 1/2" rods welded to scraps of 1.5" channels. Ball bearings are installed at the ends of the rods and retained with cotter pins. (Enco sells these ball bearings for less than \$3 each.) The distance between the inside of the bearings on each rod is the 7.5" track gauge. The wheels set on and are cradled between each pair of bearings.

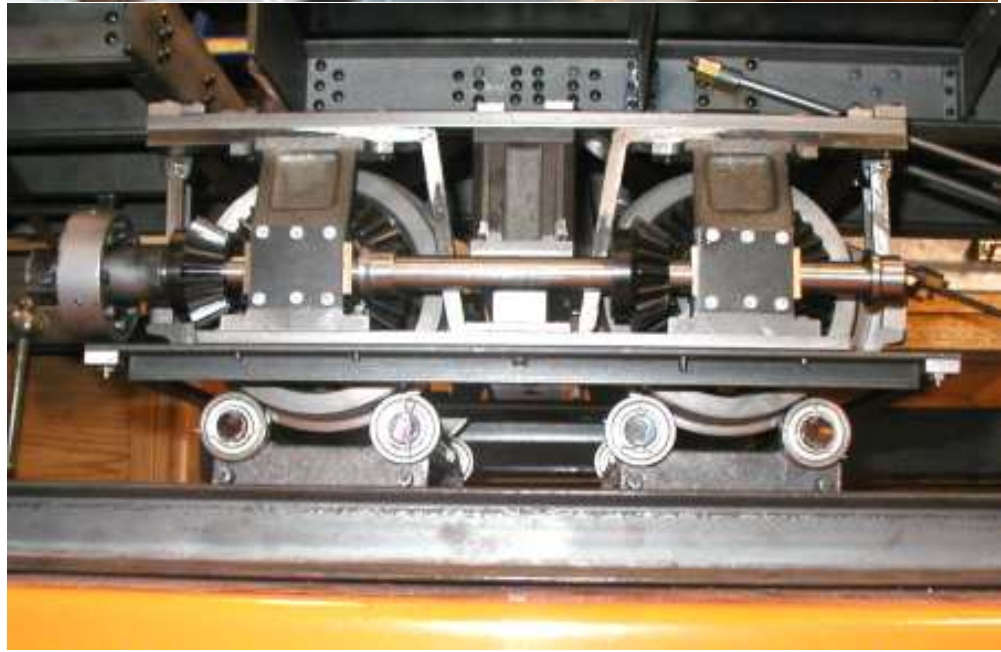




There are 1/4" pins welded into holes in the channels to hold the channels above the rails as shown on the right. The fixture can be used on the Transporter as well as on regular track. The fixture can also be set on a flat workbench. However, the truck would be free to pivot so I'm not sure that would work very well.



This photo shows a pair of fixtures under the middle truck. (The line shaft is only partially complete at this point.) The wheels turn very freely. This will allow me to spin the wheels and go no place ---- which is the objective.



With the *Transporter* and *Test Fixtures* I'll be able to fire up the locomotive and test everything out in the basement workshop. On second thought, it might be wise to move it outside before making a fire ----- the black oil soot might strain the furnace filter ---- might also strain the spouse.

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